Editorials

Cobol Through the Ages

Ten years is the length of time it has taken a standard specification for Cobol to advance from being a gleam in the eye of a few to becoming properly and legally approved. Ten full years of hard work, but also a full ten years of rewarding work.

The test for standard Cobol will come now. Hopefully the standard language will be used as an interface through which the merits and advantages of many software systems will be made available to the users of computers – quite irrespective of who makes the systems. If this happens, it will show two things: (1) the merits of Cobol and (2) the merits of standardization.

It is not certain that standard Cobol will be a success, but it should not take another ten years before we know. Indeed, we shall probably find out within ten months!

So keep your eyes open for developments. They may be important to your installation and its plans.

Newsweek Horrors

Newsweek may be, as its ads state, the most quoted newsweekly, but we hope that the only place a phrase on page 44 of its Sept. 2 issue is referred to is in the museum of journalistic horrors.

Once again we find computers being blamed as though they were humans. In this case a "computer decided which [***Saturday Evening Post***] subscribers were no longer wanted." This became news when the subscriptions of Gov. Winthrop Rockefeller, the mother of the current editor of the ***Saturday Evening Post***, and the president of Curtis Publishing Co. were cancelled to conform with the magazine's new policy to attain "quality rather than quantity" in its audience.

It seems highly regrettable that a knowledgeable magazine such as ***Newsweek*** still has not discovered that this type of action is due to the decisions of people – not computers.

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Letters to the Editor

Computerworld welcomes comments from its readers on any subject related to information handling and electronic data processing. Letters should be addressed to: Editor, Computerworld, 60 Austin St., Newton, Mass. 02160.

Readers also may call in their letters. Call (617) 527-2711 day or night and your opinions will be recorded.

EDP Schools

To the Editor:

The EDP Schools attempt to train students for higher than entry level positions, and this cannot be done without real experience.

I further question the statement [CW, Aug. 21] that there is a real need to convert to the third generation, because the only industry that has a real need is the computer industry. Most companies need systems studies to enable them to gain optimum use of the minimum amount of hardware. The growth of DP cost is not in line with the growth of net income in most companies. Part of this is due to the fact that the staff is not properly trained and does not know what to do with DP.

The answer is not in vigor and more computers, but the other way.

James Stark
DP Manager
Mass. Casualty Co.
Boston

Disk Pack Errors

To the Editor:

I read with much interest your article in the Aug. 21 issue, "What you should know about disk pack errors."

Other than through "trial-and-error" is there any practical method that can be used to detect disk pack errors prior to actually using them on a job?

I am planning to invest a substantial amount of money in the purchase of some 1316s (vs. renting) and want to assure that the pack quality will provide the desired return on investment.

Any information you can supply would be most helpful.

E.V. Gaudier, Manager
Data Processing and Systems Dept.
Canton Textile Mills
Canton, Ga.

Pack quality is currently something which cannot, to our knowledge, at least, be directly tested. In fact, even the meaning of many of the so-called specifications seem ambiguous. The only recent development which may help is a disk pack tester to be marketed by Peripherals Inc. of Phoenix. But even this seems more aimed at the manufacturers' market rather than at the users'. Sorry to be so negative. Ed.

Software and Ethics

To the Editor:

Poor business judgment over end-product quality and competence is demonstrated by Yale's ironic selection of IBM to prepare an introduction to software for *Cybernetics 70* [CW, Aug. 21]. As John Diebold comments in the August '68 issue of the *Dun's Review*, IBM gave up on software some years ago, or words to that effect.

IBM's software history has been so consistently awful, in fact, that it's created the whole new business and investment opportunity CW designates "Software & EDP Services" on its financial page. Any long time programmer or analyst who has sought employment by this segment knows now what they want: years of S360/DOS/Cobol hands-on experience, in some cases I have seen, for more years than the system has been on the market, while at the same time any and all other previous experience is totally ignored. Here in NYC, at least, this situation has reached the level of hysteria. Take the case of one programmer analyst with only the above qualifications and otherwise considered a lightweight who was drawing $22K per annum.

Worse still, what other microcosm of our whole society is more representative today of the haves than our own data processing community? When will we slush out our "rascals" as Dr. Grosch politely calls them and get down to the real computer work, and fun, of freeing people from drudgery and frustation?

I am coming to a conviction about the serious lack of, the almost desperate need for, and the mandatory practice of a viable code of professional ethics. Mine is a voice in the wind here in NYC, both in, and out of, the local ACM chapter.

Yvonne V. Cardemil
Programmer Analyst
New York

USASCII and EBCDIC

To the Editor:

Although USASCII is now a standard code, there is not a one of us foolish enough to think that IBM's decision to use EBCDIC can be ignored. General Electric has taken an official position on this as follows:

". . . Relationships of USASCII to nonstandard codes are pertinent *only* if the manufacturers that presently have such codes clearly support USASCII *and* demonstrate how such a relationship will accelerate the industry to the proper standard . . ."

*And*ing these two sentences gives only one answer – coexistence until phaseout. Now what are the problems of coexistence?

The basic problem of coexistence is recognition! Here is a magnetic tape, here is a disk pack. Both are likely to be coded either in USASCII or in EBCDIC. How can I tell? How can the computing system tell?

For me maybe you could put EBCDIC on green disk packs, and USASCII on red, except perhaps I want to record some USASCII data in place of EBCDIC, for we rewrite magnetic media. For the computing system the only solution to recognition is self-identification. How simple it would be if only the magnetic tape label standard started off (after positioning) with the first character being the ESCape of USASCII. If the second character is O, the file is in ISO code. If it is a 1, it is in USASCII. If it is 36, say, it is in EBCDIC. Simple? From that point on we can proceed accordingly.

Carry it a bit further. Assign a (registered) switching identifier to packed numeric files. Assign one to binary files. Assign one for floating point representation of a certain type. Then such files are all self-recognizable.

The same principle can be used to self-identify other nonstandard characteristics, such as format for a disk pack. My feeling on standardization is that deviations are sometimes justified, but only when there is no possibility of mistaking that it is indeed a deviation.

I am sorry that this important point has been ignored for five years, but you will recognize now that such registry may be the hinge point of the success of USASCII and the corresponding reduction in the cost of data processing to the public. I believe that IBM and other users of EBCDIC as an internal code will find it much easier to effect the transition to USASCII (the ISO code) if this one simple feature is implemented in a standard manner.

R.W. Bemer
General Electric
Phoenix

Hardware/Software Split

To the Editor:

Your editorial in the July 31 issue concerning the separation of hardware and software development appears to misstate the situation. Software houses have never claimed that hardware manufacturers *could* not produce excellent software. The major claims of software houses are that:

Most software developed by a hardware manufacturer is often a compromise due to both predecessor and successor equipments.

That since it was "free" it would not have to be as efficient as purchased software packages; for purchased packages would not be purchased at all if they were less efficient and less desirable than software provided by the manufacturer of hardware.

NCR has not exactly entered the software field, they have been developing software for their computers for quite sometime. I believe that you could more properly say that NCR has recognized the value of independently developed software and, by its actions, has endorsed a concept which you imply is disappearing.

We have always been in a single computer industry in much the same manner as the automotive industry is a single industry. The singleness is one of purpose. Both hardware and software suppliers are attempting to provide the consumer with products best suited to the needs of the consumer.

I am sure that many companies such as ours would appreciate additional comment from you on this subject.

Estabrook Grove, President
Computer Programming, [illegible]
Greenville, S.C.

Serial Printer Seen Filling Void in Printer Market

SEATTLE, Wash. – The new Tally serial printer fills a void in the printer market, in the opinion of Tally's president, Russell Dubois.

Moreover, it means that a choice is available where there was none before, he says.

He supports his opinion by comparing his printer with the other types of printers currently available – including teletypewriters and automatic keyboards on the one hand, and high speed line printers on the other (see table) – and suggests that it will be important where people are either being hindered by the speed of the slower devices or by the cost of the faster ones.

Comparison of Various Types of Printers

Unit	Speeds	Cost	Comment
Teletypewriter or automatic typewriter	10-15 cps.	$2,000	Speed-may be too slow.
New Tally printer	60 cps.	$5,000	Type of use will have to be developed. Can produce 6 copies.
New Teletype Model 37 ASR	120 cps.	$5,000	Printing element uses nonimpact unit unable to produce multiple copies.
Low speed line printer	300 cps. (150 lpm.)	$11,000	

Three Styles of Use

Specifically, he sees the new unit being used in remote data terminals (currently using teletypewriters) or with small computers which may either be using typewriters, or 150 or 300 lpm. printers. It might also be used to provide a second printer for computer systems which are running in multiprogramming mode where the fast printer has to be reserved for one of the programs, leaving the others unable to produce needed output.

Programming for the printer, or its controller, will involve a considerable amount of work, as each character is printed as it is received. There is no buffer storage. The printing element holds the 64 characters of the font on a cylinder which revolves and moves up and down to bring characters into the print position.

Unlike the high speed, nonimpact Teletype unit recently announced, the Tally printer can produce multiple copies, using up to six part pin feed forms. Characters are printed one by one, with the element advancing along the 120 character line by single characters. A tabulating option is available. Line feeding can be given at any point of a line, and the time involved for single spacing is 30 milliseconds, or approximately twice the length of time used for a character (16 milliseconds).

The Tally serial printer, above, uses a print cylinder, right, to produce multiple copies at a speed of up to 600 wpm.

High Stacks Will Set Disk Pack Standards for Now

A CW Product Trends Report

High capacity tall stacks, like the IBM 2316, are likely to set the performance standards in disk packs for the next two years. They push the state of the art only lightly. Disk pack manufacturers can jump the capacity further with better coatings and heads to enable another increase in density. To do this, the disk drive makers will have to cooperate – but they have no motivation to do so, especially with Athana rocking the price boat for disk packs.

The drive makers would rather make other changes, and these will come. Multiple "combs" of arms on each drive are possible, but require more careful manufacturing and require the user to reprogram. Better "black box" interfaces can boost the effective transfer rate, by permitting greater density and by reducing the overhead data recorded at the start of each track. Users will prefer this as reprogramming will not be a necessity.

However, the importance of multiple combs is comparatively small beside the potential of the major change which disk drive manufacturers would like to make. They want to pack many more tracks onto each disk, and they believe it can be done.

Really 'Seek' Tracks

Here is how it would work:

The heads would be able to "feed" the strengths of the magnetic recording on the tracks, and so would be able to home on them. By contrast, the current method is that the heads simply move to a predetermined position (which can be over the track or may be to one side of it) and read whatever they can. The difference is rather like the difference between bowling down a bowling alley and down a set of grooves set into the floor.

Manufacturer Implications

The idea already has been examined enough to check on some of the implications for the user and for the trade. For the user there is increased track capacity, increased number of tracks, and the reprogramming task that goes with them. For the manufacturer there is a real possibility of breaking the lockstep dependence on IBM-set standards.

Reference Packs

This dependence is based on the current method of certifying disk packs. IBM maintains four special drives in San Jose which are carefully tuned up. These drives are used to produce reference packs, with special elliptical tracks written on tracks 72 and 73. The current definition of a satisfactory disk pack is one which can be read on a drive that can also read one of these special reference packs. Because of this, manufacturers are locked into the IBM physical formats.

With the ability to home on a track, however, it would be possible to eliminate the dependence on these reference disks and to offer different capacities from those available from IBM, while still maintaining compatibility between drives.

Users will like servo-controlled arm movement because it will involve no reprogramming for this cause – only to use the greater capacity it will make possible. Data on future high density disks packs will not be in EBCDIC with parity bits. This is because very high densities, regardless of how obtained, will require the use of error correction circuitry with data especially coded to use it.

Price Trends

All these features suggest that disk pack prices will go down still further, but disk drive prices will be firm, and the prices of new, high performance drives will be up.

360/30, 1401, H-200 FOR SALE

IPS has for sale and delivery in the near future several 360, 1401, and H-200 systems. A 360-30 65K CPU with many options is available December 1st. Five 2404 1 and 2402 1 30KC tapes are available for November delivery. Among the 1401's (all tape-oriented, with 1402 and 1403) are a 12K with 4 729 V's, a 12K with 2 7330's, and a 4K C-3 system. An H-200 20K with card I/O, printer, and 4 44KC tapes is available Oct. 15th. Another H-200 32K card/tape system is available on long-term lease in March, 1969. For prices and details, please call or write.

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Item 3: 1410-40K, 1415, 3-1414's, 4-729's, 1402, 1403. AVAILABLE 60 days.	Food
Item 4: 1401 C4 8K with 1402, 1403 and 3-1311's. AVAILABLE 90 days.	Manufacturing
Item 5: IBM 1620-20K and 40K. Additional instructions. Auto Divide Indirect Address. 1622-1, 1623-1. AVAILABLE 30 days.	School

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M.C. Camp D.W. Hart A.A. Friedman A.Z. Kluchman J.D. Mathis R.C. Donaldson

Lockheed to Design Justice Administration System

SUNNYVALE, Calif. – Lockheed Missiles & Space Co. has been chosen to help the State of Minnesota design an information system to aid in planning the administration of criminal justice. A major part of the project funding will come from the U.S. Department of Housing and Urban Development, with Minnesota providing additional support.

General Purpose Software Package

LONG BEACH, Calif. – The Army's Hunter Liggett Military Reservation at Ft. Ord has contracted with Control Technology, Inc. to prepare a general purpose software package for an expanded data acquisition and recording system. The system involves remote data acquisition devices mounted in vehicles and a central data processing and recording operation. Programs for the system's central processor, a PDP-8, are being prepared. The package includes a basic operational program, a test and diagnostic program, and modular utility program.

Vehicle Checkout System

SHERMAN OAKS, Calif. – The Jet Propulsion Laboratory has awarded a contract extension to Informatics Inc. covering the third year of a contract to provide general analysis and programming support. The work includes the development and implementation of a vehicle checkout system for the 1969 mariner probe which is designed to explore the planet Mars, as well as responsibility for developing software for the CDC 3300 computer to provide scientific and engineering data to JPL scientists.

Noise Generating Buoys

CANOGA PARK, Calif. – The Navy Purchasing Office in Los Angeles has awarded a contract to the Bunker Ramo Defense Systems Division to supply electronic noise generating buoys. Robert P. Delaney, director of the division's Antisubmarine Warfare and Oceanography Laboratory, said the contract involved the purchase of Alignment Sets for Passive Sonar, used primarily for calibration and alignment of passive sonar systems.

CONTRACTS

Field Failure Study

LOS ANGELES – The Kennedy Space Center has awarded Planning Research Corp. a contract to develop a program to investigate and determine field failure rates of the center's ground support equipment. The study will be conducted from the user's point of view and the results will be used to assess the reliability of components.

Disk Memories Ordered

COLUMBUS, Ohio – North American Rockwell Corp. has placed an order with General Precision Systems, Inc., Glendale, Calif., for an unspecified number of 1.516M disk memories for Navy shipboard use.

Correction

In the Aug. 28 issue, it was reported that Uni-Serv Corp. had signed a contract with Programming Sciences Inc. to provide the management information systems for Uni-Serv's new bank credit card plan. The contract was signed with Programming Methods Inc., not Programming Sciences.

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Medical College Orders Sigma 7 On-Line System

Meharry Medical College, Nashville, Tenn., has ordered a Sigma 7 computer system for use in a new multiphasic clinical screening program. The system will be connected on-line to medical testing instruments such as blood pressure units and electrocardiogram machines, and to consoles at which examining physicians and nurses can enter clinical observations. The college will also use the system to keep student records and to perform general processing needs of the school. A $131,000 grant by SDS helped make the multiphasic screening program possible.

Orders and Installations

The Hilton Corp., a Melbourne, Australia, apparel and hosiery manufacturing firm, has ordered a Univac 9200 computer system to handle accounts receivable and payable, for processing sales statistics, and for costing work.

An initial order for five digital simulation test equipment systems has been received by Scientific Control Corp., Dallas, to supplement existing support equipment for checkout of the Poseidon Guidance System. The equipment will be used in factory environment test centers for newly manufactured guidance systems and later in simulation of the guidance computer. Additional guidance systems are scheduled to be delivered through February, 1972, to the Navy and designated contractors.

Scheduled for installation this month, a Univac 9200 will be used at Western Montgomery County Vocation Technical School, Limerick, Pa., to instruct students in computer operation and programming this semester, and for business applications such as attendance records and report cards.

Itek Corp., Lexington, Mass., has installed a Control Data 3300 computer system for mathematical routines used in lens design. The computer also drives plotter equipment for graphic representation of lens elements for design evaluation.

Digitech, Ltd., Calgary, Canada, has ordered a digital seismic processing system from EMR Computer. The system will be used to provide seismic data processing services to geophysical contractors and petroleum companies.

The University of Arkansas Medical Center has installed a Control Data 3300 computer system to develop new techniques in patient care and hospital management. The computer will also be used for medical research and routine business data processing applications. Currently under development is a program to use the system as an aid in monitoring critically ill patients and a plan for automation of the hospital's poison control center. Future plans include computer education for University of Arkansas medical students.

CRT Unit Directly Replaces Teletype

INGLEWOOD, Calif. – A new plug-for-plug compatible product has been introduced by Computer Communications, Inc. This is a CRT display controller which is fully Teletype compatible and is designed to upgrade terminal performance in time sharing systems and communications networks. The immediate advantages are noiseless operation and greater operator flexibility. In the near future it is expected that higher speeds and graphic displays will be used to improve overall performance.

The main unit is called the CC-301 II T Display Controller. It permits easy upgrading from a Teletype terminal to CRT by allowing the standard CC-30 communications station to be treated identically to a full duplex Teletype by a computer. In general, no changes are necessary at the computer end. During a recent demonstration, users were able to dial straight into their own private networks and to use the display as a substitute for the usual hard copy printout.

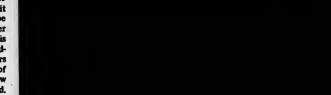
Engineering Detail

The serial interface of the CC-301 Model II T is full duplex to handle 110 baud Teletype transmission. There are no keyboard lockouts, so the CC-303 alphanumeric keyboard is enabled at all times. When the operator depresses a key, the corresponding ASCII code is transmitted immediately to the computer. The controller has a switch which determines whether or not the character code also will be stored in the buffer memory at the time of transmission.

The CC-301 Model II T will accept data and control information from the computer at all times. An audible alarm in the controller is activated for a short period of time (about one second) whenever the ASCII "bell" code is received. Depressing the "break" button of the controller opens the transmit line to the data set, causing it to terminate the call.

The current CC-30 uses an 8" CRT and can display graphic information using each bit of a character to define whether a bit position on the matrix should be on or off as well as character data. The size of the matrix is variable depending upon the coding system involved. It appears that this capability will be one of the major advantages of the new system when further developed. Hard copy of the displayed data is available when sent through an electrostatic printer.

One disadvantage of the current system is that the number of characters available across the face of the CRT screen is less than the full width of the teletypewriter line. Users wanting precise formats will therefore have to redesign them. Otherwise the lines are "folded," with the second half of the line displayed under the first half.



Example of graph plotted in graph mode. Actual size displayed on an 8 inch CRT.

Recognition Equipment Forms Subsidiary in Japan

DALLAS – Recognition Equipment has formed a subsidiary, Recognition Equipment (Japan) Inc., to market the company's products in Japan. The subsidiary will be headed by Donald N. Lincoff, vice president and general manager.

EXPANSIONS

General Analytic Opens Washington, D.C., Office

NEW YORK – General Analytics Corp. has established a Washington, D.C., regional headquarters at 4850 Rugby Ave., Bethesda, Md. The major activity planned for the facility is continued development of information systems and data resources for the federal government.

Honeywell Begins Work On San Diego Addition

SAN DIEGO, Calif. – Honeywell, Inc. has begun construction of a 50,000 sq. ft. addition to its Data Products and Services plant in the San Diego County Industrial Park. Allan L. Rudell, vice president and assistant general manager of the company's EDP division, said 600 persons would be employed at the complex by next year. The company has also exercised its option to buy an adjacent building which it will occupy by the end of the year. Keytape and disk packs will be the principal product lines to be manufactured initially. Disk pack production is scheduled to begin in November and keytape production in March.

Management Data Corp. Forms New Subsidiary

PHILADELPHIA – Management Data Corp. announced a new subsidiary, MDC Systems, Inc., to be housed in new quarters in the Cherry Hill, N.J., Industrial Center. According to Gilbert N. Zitin, president, the new company will offer management consulting services in such fields as municipalities, hospitals, and schools. James J. O'Brien will be president of the subsidiary.

Computer Research Opens Philadelphia Office

PITTSBURGH, Pa. – Computer Research, Inc., a National Industries, Inc. company, has established a Philadelphia operating branch, according to O.E. Nemlitz, president. David Vagnoni has been appointed branch manager and Richard Goldstein has been appointed branch sales manager. The new office will service brokerage houses, accounting firms, and retail organizations primarily.

NCR's Montreal Complex Nears Completion

MONTREAL – A new NCR marketing and data center complex located in the Western Industrial Park at Dorval, near the Montreal International Airport, nears completion. It will house NCR's sales and technical service personnel, replacing the company's present downtown facilities. The three story center will also include a large data processing center, scheduled to open in September.

Macro Moves To New Quarters

BLUE BELL, Pa. – Macro Corp. has moved to new and larger quarters in the Ft. Washington Industrial Park. The move was necessitated by increased business, according to W.B. Schultz, president of the company.

Midwestern Headquarters For Programming Sciences

NEW YORK – Programming Sciences has opened a midwestern headquarters at 4427 Talmadge Rd., Toledo, Ohio. Primary services will be to the banking industry. B.L. Tinsley has been named director of midwestern operations, and H. Gene Barron has been appointed director of technical operations.

Management Data Centers Continues Expansion

DALLAS – Management Data Centers, Inc. has announced an extension of its national expansion program through the acquisition of Computer Dimensions in Detroit. Edward Verdecca has been appointed manager of sales; John McDonald, manager of operations; and Gene Mayer, supervisor of systems and programs.

Advanced Computer Opens Atlanta Office

NEW YORK – Advanced Computer Techniques Corp. has opened a southeastern regional headquarters office at 26 Executive Park West in Atlanta. Edward C. Anbitz has been appointed general manager.

Shredder Plus Garbage Equals Security

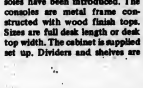
A new paper shredder, which might be described as "garbage in, security out," is designed to destroy obsolete computer print-

outs, IBM cards, tab cards, books, magazines, plastic cards, aluminum duplicating plates, and old records in file folders. The Conveyor 400 is mobile on heavy duty casters and is electrically powered. Shredmaster Corp., 891 S. Ocean Ave., Freeport, L.I., New York 11520.

Card Reader

The CC-306 card reader, an optional input device to the CC-30 communications station, has been upgraded from 100 to 300 cards per minute. Binary or coded cards may be read with mode selection under either computer or operator control. It reads standard 80 column cards and loads the data directly into the buffer memory of the CC-301 display controller from which it is available for transmission to the computer. Computer Communications, Inc., 701 W. Manchester Blvd., Inglewood, Calif. 90301.

Desk Console



Two new desktop storage consoles have been introduced. The consoles are metal frame constructed with wood finish tops. Sizes are full desk length or desk top width. The cabinet is supplied set up. Dividers and shelves are available in various sizes. Kwik-File, 2833 Harriet Ave. S., Minneapolis, Minn. 55408.

Circuit Card Guide

A new circuit card guide, Unitrack, is available with snap-in buttons, pop rivets or punched holes to meet any mounting application. The snap-in button model requires no tools or fasteners. The mounting track is precision molded of high strength polycarbonate. High density packaging is achieved by loading board components up to the board edges. Circuit card guides are available in six standard sizes for immediate shipment. Special sizes or colors to meet specific requirements are available on request. Calabro Unitrac, 8738 W. Chester Pike, Upper Darby, Pa. 19082.

'Compatible' Data Sets Marketed

SPRINGFIELD, Ill. – Sangamo Electric Co. is the latest firm to react to the impending demise of the foreign attachments tariff.

The company is marketing a new line of data sets which it coyly describes as "Western Electric compatible," thereby assuming that everyone knows that Western Electric Co. is the supply arm of the Bell System.

The first two models in the new line, the Transidata T4021S and T2011S, are available for delivery, the company said.

Cobol Standard Is Similar to Cobol-65

The new Cobol standard is very similar to Cobol-65, the basis for many recent Cobol implementations. It is arranged as a nucleus plus seven functional processing modules. A minimum Cobol need have only two of these: Table Handling and Sequential Access. Beyond the minimum, compilers can either add more functional modules, including Sort, Report Writer, Segmentation, and Library, or can beef up the power of the functional modules already present, depending on the needs of the particular implementation.

This beefing up is made possible by the provision, both in the nucleus and in each of the functional modules, for two levels of implementation (three in the case of table handling).

Names Confusing

The naming of these levels is a little confusing. The least powerful level is sometimes called "Low level," and sometimes called "Mid." The more powerful level is always called the "High" level. Table Handling, with its three levels, uses all three names: Low, Mid, and High. The reason for the confusion is simply that in the minimum (Low level) Cobol, most of the functional modules are not considered necessary. There is no need, for instance, to have a Sort module. Indeed the only items in the Low level are the Nucleus, Sequential Access, and Table Handling modules, and the name Low has been restricted to these necessary modules.

The content of the modules is as follows:

NUCLEUS

The Nucleus provides the definition of the basic language concepts: (1) the characters used for words, punctuation, and editing; (2) the structure of numeric literals, non-numeric literals, and figurative constants;(3) the use of reserved words, key words, and optional words;(4) the characteristics of data names; and (5) the structure of the reference format used in writing a program.

The Nucleus provides the facility for the internal processing of data. With this function as its guide, the Nucleus defines the basic structure of the four divisions of a program: the Identification Division, the Environment Division, the Data Division, and the Procedure Division.

In the Identification Division it identifies the source program and the output of a compilation. In addition, the user may include the date the program is written, security restrictions, and general remarks about the program.

In the Configuration Section of the Environment Division, the Source Computer paragraph identifies the computer upon which the program is to be compiled; the Object Computer paragraph identifies the computer on which the program is to be executed; and the Special Names paragraph provides a means of relating implementor names to user specified mnemonic names.

The Nucleus uses the Working Storage Section of the Data Division to define the structure of the data stored internally. The Working Storage Section has two types of entries: the Data Description entry and the Record Description entry. The data description entry is used to describe items in the Working Storage Section which bear no relationship to one another. Such items are called noncontiguous elementary items and have a level number of 77 to identify them. Items in Working Storage Section which bear a definite relationship to one another must be grouped into records and defined with a record description entry having a level number of 01. The Picture clause is used exclusively in the description of the general characteristics and editing requirements of the data. Other clauses used in the data descriptions are: Redefines, Usage, Synchronized, Justified Right, Blank When Zero, and Value.

In the Procedure Division the nucleus defines statements that perform arithmetic, general, low volume I-O, and control operations.

TABLE HANDLING

The Table Handling module contains all the clauses and statements used to define and manipulate tables.

The Occurs clause is used in the Data Division to define the number of occurrences of an element in a table; thus the need for defining each element in a table is eliminated. The clause – Usage is Index – is used in the Data Division to define an index data item.

This module also describes the techniques, such as subscripting and indexing, which are used to access a specific table element. An, example of subscripting would be TABLE-ITEM (3) where the subscript of 3 enclosed in parentheses specifies the third element in a table. An example of indexing would be TABLE-ITEM (DAY) where DAY is the index name whose value corresponds to an occurrence number. If DAY has been preset to the value of 8 by the Set statement, then the eighth table element would be accessed.

The Table Handling module defines two statements for use in the Procedure Division: Set and Search.

1. The Set statement establishes reference points for table handling operations by setting index names associated with table elements.

2. The Search statement is used to search a table for a table element that satisfies the specified condition; it also adjusts the associated index name to indicate the found table element.

SEQUENTIAL ACCESS

The Sequential Access module contains all the clauses and statements used to define and process sequential files.

In the Environment Division the File Control paragraph is used to assign a name to the file, such as Masterfile or Inputfile, and to identify the file medium, such as paper tape, punched cards, magnetic tape, or magnetic disk. Also in the Environment Division the optional I-O Control paragraph specifies the points at which rerun (rescue) is to be established and the memory area which is to be shared by different files.

The Sequential Access module uses the File Section of the Data Division to define the structure of the data contained in a sequential file. The File Section has two types of entries: the File Description entry and the Record Description entry. The File Description entry furnishes information concerning the physical structure, identification, and record names pertaining to a given file. The Record Description entry consists of a set of data description entries which describe the characteristics of a particular record.

In the Procedure Division the sequential access module uses five statements to manipulate sequential files: Open; Read, Write, Use, and Close, with the Use statement specifying procedures for input/output label and error handling that are in addition to the standard procedures provided by the input/output system.

RANDOM ACCESS

The Random Access module, described in an appendix, contains all the clauses and statements used to define and randomly access files.

In the Environment Division the File Control paragraph is used to assign a name to the file, such as Masterfile or Inputfile, and to identify the file medium, such as magnetic disc or Cram. The clauses – Access Mode Is Random and Processing Mode Is Sequential – identify the accessing of the file to be random. The clause – Actual Key Is – is used to specify the field which is used by the Seek statement to locate a specific record. The I-O Control paragraph in the Environment Division specifies the input/output techniques, the points at which rerun (rescue) is to be established, and the memory area which is to be shared by different files.

The Random Access module uses the File Section of the Data Division to define the structure of the data contained in a file. The File Section has two types of entries: the File Description entry and the Record Description entry. The File Description entry furnishes information concerning the physical structure, identification, and record names pertaining to a given random file. The Record Description entry consists of a set of Data Description entries which describe the characteristics of the particular record.

In the Procedure Division the random access module uses six statements to randomly access a file: Open, Seek, Read, Write, Use, and Close.

1. The Open statement initiates the processing of both input and output files. It performs checking and/or writing of labels and other input/output operations.

2. The Seek statement initiates the accessing of a data record for subsequent reading or writing. It uses the contents of the field named in the Actual Key clause to determine the location of the record to be accessed.

3. For random processing, the Read statement makes available a specific record from a file. Seek allows the programmer to specify error procedures when the contents of the associated Actual Key data field are found to be invalid.

4. The Write statement releases a logical record for an output file. It also allows the programmer to specify error procedures when the contents of the associated Actual Key data field are found to be invalid.

5. The Use statement specifies procedures for input/output label and error handling that are in addition to the standard procedures provided by the input/output system.

6. The Close statement terminates the processing of input and output files.

SORT

The Sort module contains all the clauses and statements used to define and perform the sorting of a single file with the provision for special handling of the file both before and after it has been sorted.

In the Environment Division the File Control paragraph is used to assign a name to the file, such as Stranfile, and to identify the file medium, such as magnetic disk or Cram. The I-O Control paragraph in the Environment Division specifies the memory area which is to be shared by different files.

The Sort module uses the File Section of the Data Division to define the structure of the data contained in a file. The File Section has two types of entries: The Sort File Description entry and the Record Description entry. The Sort File Description entry furnishes information concerning the physical structure, identification, and record names of the file to be sorted. The Record Description entry consists of a set of data description entries which describe the characteristics of the particular record.

In the Procedure Division the Sort module uses three statements to perform the sorting of a single file: Release, Sort, and Return.

1. The Release statement transfers records to the initial phase of the sort operation. When control passes from the input procedures containing the Release statement, the file consists of all those records that were placed in it by the execution of Release statements.

2. The Sort statement creates a sort file by executing input procedures or by transferring records from another file, sorts the records in the sort file on a set of specified keys, and in the final phase of the sort operation, makes available each record from the sort file, in sorted order, to some output procedures or to an output file.

3. The Return statement obtains sorted records from the final phase of a sort operation. The execution of the Return statement causes the next record, in the order specified by the keys listed in the Sort statement, to be made available

(Continued on Page 9)

Structure of USASI Cobol Standard

Nucleus	Table Handling	Sequential Access	Sort	Report Writer	Segmentation	Library	Random Access (in an appendix)
			Functional Modes				
High	High	High	High	High	High	High	High
	Mid	Mid	Mid	Mid	Mid	Mid	Mid
Low	Low	Low	Null	Null	Null	Null	Null

The U.S.A. Standard Cobol provides for a series of levels in both the Nucleus, and in the operational modules, such as Table Handling. These steps allow the descriptions of compilers, and of user object programs, to be given simply and to be compatible. A specific compiler might be, for instance, described as having the High-Level Nucleus, Sequential Access, and Sort facilities, and Mid-Level Table Handling. Then a user, knowing that his particular program assumes High-Level Nucleus, and Mid-Level Sort, Sequential Access and Table Handling facilities, knows that his program will compile without running into language facilities which have not been provided.

Shareholders Get Quick Information

Mutual Fund's Accounts Computerized

BOSTON – Shareholders of a mutual fund here are receiving "instant" information about their accounts from a computer.

By telephoning a clerk and providing the proper identification, a shareholder with the Putnam Group of Mutual Funds can get a report on his transactions for the entire year in as little as three minutes.

Previously, it might have taken up to five days to get the same information. Nearly 1400 shareholder accounts are interrogated each day.

Orders Processed

The service is one of several that a new IBM 360/40 makes available to the Putnam Group's 275,000 shareholders. Also speeded is preparation and receipts of customer orders, including computer printing of the certificate. Formerly, it took as much as a week and a half.

David Hughey, vice president of operations, said that introduction of two new funds, Putnam Equities Fund and Putnam Vista Fund, would have deluged the firm's accounting staff in an avalanche of paper if it had not been for the computer. Some 40,000 shareholders of Putnam Equities were registered in a five month period.

CRT Terminals Used

Explaining how shareholder inquiries are handled, Hughey said the telephone calls go to one of four operators seated at IBM 2260 visual display stations. Upon receiving the proper identifying data, the operator keys the inquiry into the computer. Within seconds, the account information is shown on the screen of the display station and relayed to the shareholder by the operator.

Prior to storing transaction information in the computer, mutual fund shareholders would call their dealers, who in turn, would call Putnam. This rounds bout process often took as long as five days.

Dealers Aided

Dealers, formerly intermediaries for almost all inquiries concerning shareholder accounts, are now relieved of enormous loads of paperwork.

Putnam's computer also is used to analyze stocks. Each month Putnam runs a stock analysis on some 1200 companies. The computer groups the companies by industry, analyst, earnings per share, current price, and monthly percentage increase. It also rates a company in relation to the other 1199 companies on Putnam's list.

Unit Record Equipment Joins the Posse, Helps to Cut Rustlers Off at the Pass

FORT WORTH, Texas – Computers have stolen the spotlight, but the venerable EAM equipment is still around – and still doing worthwhile jobs that can't be handled economically by computers.

Here in Fort Worth, an IBM 403 Accounting Machine and other unit record equipment have been given the task of fighting saddle rustlers by the Texas and Southwestern Cattle Raisers Association. In its first year, the association's system aided in the recovery of 94 saddles and helped to break up a theft ring.

Saddle rustling, one of several modern offshoots of cattle rustling that includes the theft of horse trailers and other portable ranch equipment, may not sound like much of a problem to people in urban areas. But a saddle is a tool of the trade to a cowboy, and its loss is no joke.

800 Saddles Stolen

"We have a listing on nearly 800 saddles reported stolen during the past few months," said Don C. King, association general manager. "Since our recovery system started operation last fall, we've had considerable success. We've matched 94 stolen saddles with their owners, and we're now able to trace and return nearly two saddles a week."

Phil Wyant, who developed the program, explained that when a rider reports a saddle theft, authorities give him a form with 18 questions about the saddle. These range from the size and composition of the saddle horn to whether there are any scars or paint marks on the saddle. Each form contains a detailed, labeled drawing of a saddle enabling even a dude to answer the questions.

The information provided by investigating police or the victim is processed by the IBM 403, which then arranges it into an indexing and cross-filing system.

"If the owner can remember even a few features, we can develop an indexing sufficient to get his saddle back when it is finally located," Wyant said.

When saddles are found by authorities in the course of their work, their descriptions are processed. The EAM equipment enables the association to make quick matches.

This matching process also has aided law enforcement officers in breaking up crime rings, Wyant said.

"Police in Post, Texas, recently stopped two men for a routine check and noticed they had a pair of saddles with them," Wyant said. "While one officer talked with the men, the other filled out our saddle identification forms and gave us the information by telephone. The data processing equipment immediately identified them as stolen saddles. The men were arrested and admitted they had been selling stolen saddles to a firm in Houston. Sheriff's deputies in Houston raided the firm and found over 50 saddles, a number of guns, and several color television sets – all stolen property."

Other Areas Interested

Organizations in California and Indiana as well as several insurance agencies are now studying Texas and Southwestern's recovery procedures, Wyant said.

Special Texas Ranger Ronnie Steen records the description of a saddle found abandoned in a field. A simple data processing system helps to get recovered saddles back to their owners.

New U.S.A. Standard Cobol Similar to Cobol-65

[Continued from Page 8]

for processing in the record area associated with the sort file.

REPORT WRITER

The Report Writer module contains all the clauses and statements used to define and generate a report. The purpose of the Report Writer module is to allow the programmer to describe his report pictorially in the Data Division, thereby minimizing the amount of Procedure Division coding necessary.

In the Data Division the Report Writer module uses the File Description entry in the File Section to define the physical structure of the file which will receive the report. The Report clause in the File Description entry cross references the Report Description entries with their associated File Description entry.

The Report Writer module uses the Report Section of the Data Division to define the structure of the report. The File Section has two types of entries: the Report Description entry and the Report-Group Description entry. The Report Description entry contains information pertaining to the overall format of a report named in the File Section, such as: the number of physical lines per page and the limits for presenting specified headings, footings, and details within a page structure. The Report-Group Description entry specifies the characteristics of a particular report group and of its individual data name items within a report group. A report group is a set of data items that is to be presented as an individual unit, such as: heading groups, footing groups, and detail groups.

In the Procedure Division the report writer module uses four statements to generate a report: Initiate, Generate, Terminate, and Use.

1. The Initiate statement begins processing of a report.

2. The Generate statement links the Procedure Division to the report writer described in the Report Section of the Data Division at process time.

3. The Terminate statement terminates the processing of a report.

4. The Use statement specifies Procedure Division statements that are executed just before a report group named in the Report Section of the Data Division is produced.

SEGMENTATION

The Segmentation module provides a means by which a programmer can communicate with the compiler concerning overlay requirements for the object program.

When segmentation is used, the entire Procedure Division must be organized into sections. Each section must be assigned a priority number to indicate whether it is a permanent segment, an overlayable fixed segment, or an independent segment: A permanent segment is a part of the object program which is always in memory; it cannot be overlaid by any other part of the program. An independent segment is a part of the object program which is not always in memory; it is an overlay stored on an external file medium. An overlayable fixed segment is a part of the object program which is initially in memory; however it can be overlaid, if necessary, by another segment to optimize memory utilization. However, if it is called for by the program, it is always made available in its last used state.

Segments with priority number 0 through 49 are permanent segments belonging to the fixed portion of the object program stored in memory. Segments with priority number 50 through 99 are independent segments stored on an external file medium.

When the Segment Limit clause is specified in the Object Computer paragraph of the Environment Division, only those segments having priority numbers from 0 up to, but not including, the priority number designated as the segment limit, are considered as permanent segments of the object program. Those segments having priority numbers from the segment limit through 49 are considered as overlayable fixed segments.

LIBRARY

The Library module provides a means by which a programmer obtains Cobol text from a Cobol Library for use with a source program at compile time. The effect of the compilation of library text is the same as if the text were actually written as part of the source program.

The Cobol library may contain text for the Environment Division, the Data Division, and the Procedure Division available through the use of the Copy statement. The Copy statement may appear (1) in any of the paragraphs in the Environment Division, (2) in any level indicator entries or an 01 level number entry in the Data Division, and (3) in a section or a paragraph in the Procedure Division.

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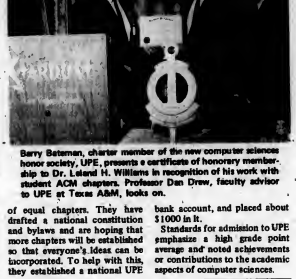
Computer Science Students Form a New Honor Society

COLLEGE STATION, Texas – A scholastic honor society for students of computer sciences has been formed here with the approval of the Texas A&M University faculty and the ACM. The society, Upsilon Pi Epsilon (UPE), evolved from the desire of a number of computer sciences students, who were not eligible for membership in the various engineering societies, to join a society.

According to Barry Bateman, president of the Texas A&M student chapter of ACM, work on the new society took two years before the first formal meetings were held in 1967 and a UPE key designed. It was found that 1967, in binary, is a symmetrical number (11111011111) and this was incorporated in the design of the key.

Only one chapter now exists, but its founders hope there will be a national organization. The Texas members have strongly opposed any suggestion that they should effectively "take over" the national organization, or be other than the first of a number of equal chapters. They have drafted a national constitution and bylaws and are hoping that more chapters will be established so that everyone's ideas can be incorporated. To help with this, they established a national UPE bank account, and placed about $1000 in it.



Barry Bateman, charter member of the new computer sciences honor society, UPE, presents a certificate of honorary membership to Dr. Leland H. Williams in recognition of his work with student ACM chapters. Professor Dan Drew, faculty advisor to UPE at Texas A&M, looks on.

Standards for admission to UPE emphasize a high grade point average and noted achievements or contributions to the academic aspects of computer sciences.

Treasurer Criticizes Council

Reserve, Budget Problems Plague ACM

LAS VEGAS, Nev. – The problem of the ACM finances, revealed here Sept. 4, was confirmed at the ACM Council meeting in an outburst by Walter Hoffman, the treasurer, who accused the latest ACM Council, and its predecessors of "financial irresponsibility." His outburst came over the comparatively minor sum of $10,000, but was clearly more deep seated.

Two areas seem to be involved – reserves and budgeting. With a smaller membership in the past, the question of reserves had not been very important and no provision has been made for it in the various budgets. The need also has been somewhat obscured by an apparent healthy bank balance, but a calculation by the chairman of the finance committee, Bruce Gilchrist, established that the bank balance at the end of the 1968 fiscal year last June was inadequate to meet the liabilities of the society. Moreover, as more and more people join the society, the price of contingent liabilities for future publications and other services rises proportionately. Currently, the ACM total assets (at $310,000) fall about $70,000 short of known liabilities ($385,000). The 1969 and 1970 budgets provide for increasing the society's assets by $95,000 and $45,000 respectively. However, this will only handle additional liabilities due to increased membership, and it is expected that the society will still be $70,000 in the red.

Expenditures Not Budgeted

In the past, budgets have not been a very accurate reflection of expenditures. For instance, in 1968 the postage and freight budget was overexpended seven times ($29,700 expense on a $4000 budget). The committee for chapter aid spent $45,500, although only budgeted for $28,000. The insurance budget was overspent more than six times ($31,000 against a budget of $5000).

Some of these differences were easily explained. The expenses for professional development, approximately $50,000 over the budget, was matched by an equivalent amount that was overincome. The gifts and grants income was nearly $40,000 higher than expected ($11,000), due primarily to National Science Foundation support for *Computing Review*.

Constitutional Problems

The overexpenditures pose more than a financial problem to the ACM. Constitutional problems also are involved. The ACM Constitution forbids the expenditure of more than $25,000 over budget without membership approval, and a number of the 1968 expenditures appear to have been outside the power of the council to authorize.

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Standard Fortran Planned for DOS

WHITE PLAINS, N.Y. – IBM is providing a second and more extensive Fortran IV compiler for DOS users, to be ready by next March. The new compiler, unlike the TOS/DOS basic compiler, is compatible with the full U.S.A. standard Fortran, and IBM says that it will allow users to write programs in fewer statements because of increased language functions. No performance details are currently available. The new system provides user advantages during the writing and testing of programs as well as at object time. The object time modules are compatible with those of the current TOS/DOS basic compiler.

Language Improvements

The language improvements include better facilities for subscripts, list directed input/output, and the use of double precision and complex numbers. Subscripts can use a generalized form instead of the restricted form, and seven dimensions are possible. Double precision, which was previously available only as an explicit type, can now be used in the generalized type statement. A number of new in-line and out-of-line complex and double precision routines are provided.

Compilation and Testing

During debugging a special debug facility is available. Before execution the dimension statements controlling the various areas and the format statements controlling the format of the printouts can be amended by the operator.

Batch compilation is available and object modules produced by the basic Fortran IV can be mixed with those produced by the new full Fortran IV. During the operation of object programs, improved overlay facilities are available for various complex and double position functions.

User reaction to the announcement has been good. Indeed, in some cases it has been suggested that the improved DOS reduces the interest of disk installations in the DOS PL/I compiler.

'Quikcollect' Helps Choose Locations for Lock Boxes

NEW YORK – Quikcollect, a Fortran IV computer program which optimally schedules the location of bank lock boxes, has been announced by Scheduling Techniques, Inc. here. Seymour Altucher, the company president, told *Computerworld* that in tests conducted on actual corporate data the program has produced schedules which could result in reductions in the accounts receivable float by up to 10%.

The lock boxes are simply post office boxes to which a firm who has a large sales area can instruct its customers to forward all remittances. Banks in various places are appointed as agents for the firm to collect mail sent to specific lock boxes and to process and deposit the checks to the firm's account. An automatic transfer of funds from outlying banks to a concentration bank may be made utilizing the bank wire. Following these transfers a daily advice of credit for the deposits is forwarded to the firm for posting to its accounts receivable ledger. In addition, each bank forwards information regarding the individual remittances processed to the firm.

Cost vs. Savings

The cost of each lock box usually consists of a fixed charge in the form of a minimum balance which the firm must keep in each of the banks and a charge per remittance processed and deposited by each bank. Collection costs to the firm now become a function of the investment rate of return of the firm, the number of days required for collection, the total amount collected, the charge for each remittance collected, and the minimum balance required by the banks. The savings to the firm resulting from the use of lock boxes are achieved by reducing the time lapse before the funds become available to the firm.

To handle the task manually, says Altucher, is practically impossible. He cites a calculation which would take 140,000 years to complete by hand. Quikcollect uses a heuristic model to do the equivalent evaluation on the computer in a few minutes, he said.

GE Offers Faster Payroll Package

PHOENIX – General Electric has a new automated payroll processing system for the GE-400 line of computers which GE claims accumulates, calculates, and reports practically every function of payroll accounting in a fraction of the former time.

Called the Comprehensive Payroll Accounting System, it has been in use for over a year, GE says. Its operations range from paycheck disbursement to tax deductions to commission payments to accruing of employee benefits.

The system will process the complete payroll of an organization of 1000 or more employees, and will automatically compute tax deductions for 50 states and over 40 local taxes.

The system operates with any GE-400 computer system with a 16,000 word memory, card reader, card punch, five tape handlers, high speed printer, and console typewriter.

Documentation of the system design, including programs and manuals, is available from GE's Application Systems Library. The system uses the GE Macro Assembly Programming language (MAP). Report formatting and printing are accomplished with the GE Report Program Generator (RPG) segments.

Automated System Begun for Brokers

NEW YORK – The nation's first automated, shared system for transmitting buy and sell orders for securities brokerage firms has been officially placed in service by Western Union Telegraph Co.

Called Sicom (Securities Industry Communications), the system uses Sperry Rand Univac 418 switching computers housed in Western Union's new Technical center in Mahway, N.J.

70,000 Transactions An Hour

The nationwide system, with a current capacity of 900 stations, can handle 70,000 orders or confirmations an hour, Western Union said. Both the number of stations and the capacity can be expanded, the company said.

Network codes and automatic identification procedures will be used to protect the message privacy of each user, Western Union said.

Shields & Co., the first subscriber, has been using the system on a trial basis for the past two months, transmitting about 50,000 messages a week among 44 stations in 16 cities.

Western Union believes that the system will make computer controlled operation economically possible for many brokerage firms now unable to justify large capital investments in computers, programs, and transmitting equipment. It hopes that the 10 securities firms with their own automated systems will someday switch over to the shared system.

Will Cut Handling, Errors

The system will take over some of the manual steps that firms now use in the handling of securities. Manual handling is currently a major source of errors. Errors, in turn, have played a major role in the paper backlog that has forced the securities markets to close one day a week since June 12.

The First Hanover Corp. is expected to be the second subscriber, connecting 23 stations. Hirsch & Co. wants to use the system to tie in 27 stations, including five in Europe.

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Earnings Reports

DATATAB

NEW YORK – Datatab's net earnings for the first six months were $100,910 (39 cents a share), up from $37,426 (19 cents a share) in the same period last year, on total revenues of $620,879, up from $481,393, the company said.

POWER INDUSTRIAL

RUTHEFORD, N.J. – Power Industrial Products Co., a computer service and industrial supply firm, has reported a decrease in sales to $7,632,475 and a net loss of $399,097 (74 cents a share) for its first nine fiscal months.

PLANNING RESEARCH

LOS ANGELES – Record earnings of $1,364,832 (85 cents a share) on revenues of $23,435,008 have been achieved by Planning Research Corp. for the fiscal year ended June 30. Earnings were up 21% and revenue up 19%, the company said.

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COMPUTERWORLD

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Acquisitions

Electronic Memories Buys Midwest Circuits

HAWTHORNE, Calif. – Electronic Memories, Inc., a magnetic core memory manufacturer, has acquired Midwest Circuits, Inc., a printed and multilayer circuit board manufacturer, for an undisclosed amount of stock.

Donald Benner will continue to run the newly purchased company, the announcement said.

Allstate Investment To Buy Shared Data

NEWPORT NEWS, Va. – Allstate Investment Corp. has reached an agreement in principal to buy Shared Data Corp. in New York, for an undisclosed amount of stock.

The planned merger, Allstate's first in the data processing and software fields, is subject to a definitive contract and approval by the boards of both companies.

Donald W. Horton, James C. Butler, Leighton A. Bloom, and Donald P. Blakeslee will continue with Shared Data, Allstate said.

Eyler Associates Bought By Management Science

ATLANTA – Management Science America, Inc., a computer oriented management consulting firm, has acquired Eyler Associates, Inc. through an exchange of common stock. Terms were not disclosed.

Eyler, based in Maryland, specializes in operations research for federal and state agencies.

Affiliated Computer, Data Processing Plan to Merge

DALLAS – The directors of Affiliated Computer Systems, Inc. and Data Processing Associates, Tulsa, Okla., have approved a merger of the two companies, subject to approval by both sets of stockholders. Terms were not disclosed.

Both firms specialize in systems design, systems management, programming, and computer processing services.

Under the agreement, DPA will become a division of ACS. No changes in either company's management are planned, ACS said.

Planning Research Reaches Maynard Merger Accord

LOS ANGELES – Planning Research Corp., a systems analysis and computer systems design and software organization, and H.B. Maynard & Co., Inc., a management consulting organization, have agreed that the Maynard firm will merge into Planning Research, subject to the approval of appropriate regulatory agencies and stockholders of both companies.

The agreement calls for an initial payment of Maynard of 245,000 shares of Planning Research common stock. Up to 245,000 additional shares would be paid at the end of four years, with the exact number to be determined by Maynard's earnings during that period.

Maynard, headquartered in Pittsburgh, Pa., has offices in 18 U.S. cities and nine foreign countries.

R/G Computing Plans to Buy Applied Peripheral Systems

SAN ANTONIO, Texas – R/G Computing and Processing, Inc., a scientific holding company, plans to acquire Applied Peripheral Systems, Inc. in Houston, a manufacturer of products for the data communications field. Terms were not disclosed.

United Data Centers Buys Electronic Processors

NEW YORK – United Data Centers, Inc. has bought Electronic Processors, Inc. in Birmingham, Ala., a supplier of data processing services.

The announcement said Andy Rogers would continue as president of Electronic Processors.

Strategic Systems Buys ConData; Sells Two Units

NEW YORK – Strategic Systems Inc. has bought Bates Manufacturing Co.'s wholly owned subsidiary, ConData Systems, Inc., for 175,000 shares of Strategic Systems stock.

The transaction makes Bates the largest single stockholder in the computer software company.

In a simultaneous transaction, two of ConData's subsidiaries – Data Input Corp. and ConData Services, Inc. – were sold to Strategic Data Centers, Inc. under a stock transaction in which Strategic Data paid Strategic Systems 70,000 shares of Strategic Data stock.

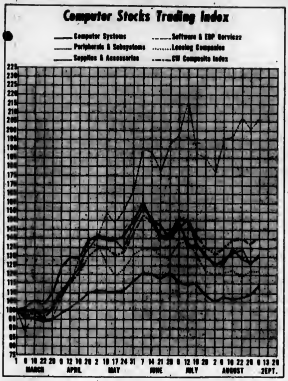
The announcement said that Strategic Systems would retain ConData's Setab Computer Institute, Endata Personnel Consultants, and Cross Roads Personnel, Inc. Cross Roads will operate in the future as Strategic Careers, Inc., the announcement said.

Data Products Buys Part Of Computer Mechanisms

CULVER CITY, Calif. – Data Products Corp., a manufacturer of computer peripheral equipment, has acquired an interest in Computer Mechanisms Corp., South Hackensack, N.J. The extent or cost of the acquisition was not disclosed.

According to Data Products, Computer Mechanisms will continue in the design and manufacture of equipment complementing computer peripherals, and will enter into the development of projects of mutual interest to both companies.

Data Products and its subsidiaries manufacture high speed line printers, disk file memory systems; card readers and punches; ferrite memory cores; and systems for users of electronic data processing equipment.



CW Indexes Rise Along With Market

Computerworld's Composite Stock Index was up 4 points (2.9%) as the stock market closed up for the week ended Sept. 6.

The Dow-Jones industrial average closed at 921.25, up 25.24 points (2.8%); the Standard and Poor's industrial average closed at 110.36, up 2.71 (2.5%); the New York Stock Exchange composite average finished at 56.63, up 1.19 (2.1%); the American Stock Exchange price index closed at $29.37, up 61 cents (2.1%); and the N.Q.B. over-the-counter industrial average stood at 411.69, up 4.37 (1.1%).

Volume Up

Volume for the week on the NYSE was 44,852,119 shares, up from 38,592,280 shares the previous week. Volume on the AMSE was 22,766,025 shares, up from 18,510,570.

It was the first time in months that the stock markets had been open for four consecutive days of trading. Because Labor Day was a holiday, the market was open Wednesday, Sept. 4, but the Wednesday closings – designed to ease the paperwork jam – are scheduled to continue for the rest of the month.

Most Active List

Among the week's 20 most active stocks on the NYSE were Raytheon, 5th, up 14.95% to 43-1/4 on 340,000 shares traded; Bunker-Ramo, 8th, up 8.58% to 17-3/8 on 307,000 shares traded; and Control Data, 17th, up 2.48% to 134-1/4 on 247,000 shares traded.

It was the second consecutive week that Control Data gained. The stock, which led the most active list the past two weeks, had taken a 17.17% drop to 128 Aug. 22.

New High

Of the *Computerworld* listed stocks, only one issue reached a new high for the year: National Computer Analysts closed up 11.29% at 69. No stocks dropped to new lows.

Among the *Computerworld* listed stocks, 57 closed up, 30 were down, and seven remained unchanged. The previous week, 37 issues were up, 54 closed down, and four remained the same.

Overall on the NYSE, 1,062 issues advanced, 462 declined, and 140 remained unchanged.

CW Indexes Improve

With the exception of the Leasing index, which remained unchanged, the *Computerworld* stock sector indexes all closed up.

The two largest gains were in the Peripherals & Subsystems index, up 6 points (4.8%) to 131, and the Supplies & Accessories index, up 5 points (4.6%) to 114. The previous week, the Peripherals & Subsystems index was off 9 points (6.7%) to 125.

The Computer Systems index was up 3 points (2.4%) to 130, possibly the start of an upward trend. The sector has been generally dropping since its June 7 high of 161.

The Software & EDP Services finished at 207, up 6 points (3%). The sector, which closed off 7 points (3.4%) the previous week, seemed to be continuing its erratic movement.

Trading Commentary

The stock market had its best week of the summer as the Federal Reserve System kept up its steady injection of cash, interest rates continued to show slight signs of easing, retail trade kept up an unexpectedly strong pace in spite of the 10% income tax surcharge, and the Czech situation seemed to pour more money into the economy.

COMPUTER STOCKS: TRADING SUMMARY

WEEK ENDED SEPT. 6, 1968

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	COMPUTER SYSTEMS	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
NYSE	100 3/8	[illegible]	[illegible]	Burroughs	+ 6	[illegible]	[illegible]
NYSE	67 3/4	110– 64	[illegible]	Collins Radio	[illegible]	[illegible]	[illegible]
NYSE	101 1/2	[illegible]	[illegible]	Control Data	+ 3 1/4	+ 2.48	[illegible]
AMSE	102	[illegible]	[illegible]	Digital Equipment	– 3 1/4	[illegible]	[illegible]
NYSE	[illegible]	[illegible]	[illegible]	General Electric	+ 1	+ 1.10	[illegible]
NYSE	36	31– 30	30	Hewlett-Packard	+ 3 3/4	+ 4.92	+ 33.32
NYSE	93 1/8	144– 90	121 3/4	Honeywell	+ 6 7/8	+ 5.67	+ 30.74
NYSE	288 1/2	375–300	340 1/2	IBM	+ 6 1/2	+ 1.94	+ 18.02
NYSE	100 7/8	153– 98	129	National Cash Register	+ 2 1/2	+ 1.98	+ 24.10
NYSE	46 7/8	60– 44	47 1/2	RCA	+ 1 1/4	+ 2.70	+ 1.33
NYSE	[illegible]	[illegible]	[illegible]	Raytheon	[illegible]	[illegible]	[illegible]
OTC	36 1/2	[illegible]	[illegible]	Scientific Controls Corp.	– 2	[illegible]	[illegible]
NYSE	76 5/8	[illegible]	[illegible]	Scientific Data	—	—	[illegible]
NYSE	46	[illegible]	[illegible]	Sperry Rand	+ 1/8	[illegible]	[illegible]
AMSE	22 1/8	[illegible]	[illegible]	Systems Engineering Labs.	+ 2	+ 7.27	[illegible]

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	PERIPHERALS & SUBSYSTEMS	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
[illegible]	[illegible]	[illegible]	[illegible]	Addressograph-Multigraph	+ 10	[illegible]	[illegible]
[illegible]	21	[illegible]	[illegible]	Alphanumeric	– 4	– 7.14	[illegible]
NYSE	[illegible]	[illegible]	[illegible]	Ampex	+ 1 3/8	[illegible]	[illegible]
OTC	17 1/4	[illegible]	[illegible]	Bolt, Beranek & Newman, Inc.	+ 1/4	[illegible]	[illegible]
NYSE	16 1/2	[illegible]	17 3/8	Bunker-Ramo	+ 1 3/8	[illegible]	[illegible]
AMSE	33 1/8	50– 27	39	Calcomp	+ 2 5/8	+ 7.22	+ 21.40
OTC	24 1/2	40– 20	33	Cognitronics	+ 2	+ 5.88	+ 71.40
OTC	12	17– 10	14 1/4	Computer Equipment	+ 1/4	+ 1.79	+ 18.75
OTC	12 1/4	23– 13	17 3/8	Data Products	+ 3/4	+ 4.51	+ 13.83
OTC	19 1/4	27– 16	21 1/2	Digitronics	—	—	+ 11.69
[illegible]	[illegible]	[illegible]	[illegible]	Electronic Memories	– 3/8	[illegible]	[illegible]
OTC	10	[illegible]	[illegible]	Fabri-Tek	—	—	[illegible]
OTC	[illegible]	71– [illegible]	[illegible]	Gerber Scientific	– 1	– 1.72	[illegible]
OTC	[illegible]	[illegible]	21 1/2	Information Displays	+ 1	+ 4.87	[illegible]
AMSE	[illegible]	[illegible]	[illegible]	Milgo Electronic	– 1	[illegible]	[illegible]
AMSE	87 1/2	100– 84	98 1/2	Mohawk Data Sciences	+ 5 1/8	+ 5.30	[illegible]
OTC	74	130– 71	100	Optical Scanning Corp.	+ 10	+ 10.00	+ 47.30
OTC	18	33– 10	31 1/2	Photon	+ 2 3/4	+ 13.91	+ 75.00
AMSE	26 5/8	30– 20	28 1/2	Potter Instrument	– 1/8	– 0.47	+ 2.61
OTC	30 1/4	36– 28	36	Recognition Equipment Corp.	+ 3	+ 2.88	+116.88
[illegible]	18	[illegible]	[illegible]	[illegible]	– 1 1/4	[illegible]	[illegible]
NYSE	40 1/8	[illegible]	[illegible]	Sanders	+ 3/8	+ 0.79	[illegible]
OTC	47	[illegible]	[illegible]	Scan-Data	+ 5	+ 7.14	[illegible]
OTC	40 1/2	91– 36	40	Tally Corp.	+ 2	[illegible]	[illegible]
NYSE	246 1/4	301–[illegible]	[illegible]	Xerox	+ 5	+ 1.70	[illegible]

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	SUPPLIES & ACCESSORIES	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
OTC	[illegible]	64– 37	40 1/2	Acme Visible	– 1 1/4	[illegible]	[illegible]
NYSE	[illegible]	[illegible]	19 1/2	[illegible]	+ 1/4	[illegible]	[illegible]
OTC	13 5/8	21– 13	20 1/2	Baltimore Business Forms	+ 4	[illegible]	[illegible]
AMSE	27	44– 21	30 1/4	Barry Wright	+ 3/8	+ 1.2[illegible]	+ 12.04
OTC	31 1/8	40– 30	[illegible]	[illegible]	– 1	– 2.71	[illegible]
OTC	27 1/4	30– 20	22	Ennis Business Forms	—	—	+ 17.43
NYSE	84 1/8	110– 21	107 7/8	3M Company	+ 2 1/4	+ 2.10	+ 28.21
NYSE	19 3/8	28– 16	25 1/4	Memorex	+ 2	+ 9.52	+ 30.32
OTC	27 1/4	33– 20	28 1/8	Moore Business Forms	– 1/4	– 0.88	+ 8.88
NYSE	57 1/4	78– 47	72	Nashua Corp.	– 1 3/4	– 2.37	+ 25.76
OTC	21 1/8	80– 30	30	Reynolds & Reynolds	+ 1/2	+ 1.18	[illegible]
OTC	30 1/2	35– 24	22 1/8	Standard Register	+ 2 1/8	[illegible]	– 21.[illegible]
NYSE	37 3/4	44– 30	34 1/8	Uarco	– 1/8	– 1.40	[illegible]
AMSE	14 1/4	30– 10	19	Wabash Magnetics	– 1 1/8	[illegible]	[illegible]
OTC	30 3/4	35– 26	30 1/8	Wallace Business Forms	+ 1/2	+ 1.[illegible]	+ 17.47

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	SOFTWARE & EDP SERVICES	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
OTC	7 1/2	25– 7	16 1/2	Advanced Computer Techniques	– 3/4	– 4.35	+120.00
OTC	17	33– 14	25	Applied Data Research	—	—	+ 47.06
OTC	15 1/2	124– 16	17	Aries	– 1/2	– 2.86	+ 9.68
AMSE	47	60– 47	[illegible]	Automatic Data Processing	+ 2 1/4	+ 4.16	[illegible]
OTC	4	18– 4	14 1/4	Automation Sciences	– 3/4	[illegible]	[illegible]
OTC	4 1/2	20– 2	19	Brandon Applied Systems	+ 1/2	[illegible]	[illegible]
AMSE	22 7/8	40– 30	34 1/4	Computer Applications	+ 3 1/2	+ 10.87	[illegible]
OTC	9	13– 7	13 3/4	Computer Environments	—	—	[illegible]
OTC	30	60– 24	38	Computer Network	+ 4	+ 9.09	+ 60.00
AMSE	30	64– 38	44	Computer Sciences	– 7/8	– 1.96	+ 10.00
OTC	38	83– 32	22 1/4	Computer Usage	– 2 3/4	– 7.[illegible]	– 17.31
AMSE	38 1/2	81– 38	53 7/8	Computing & Software	+ 7/8	+ 1.65	+ 47.80
OTC	**	**	**	Comshare	**	**	**
OTC	12 1/2	35– 10	27	[illegible]	– 1 1/2	[illegible]	+116.00
OTC	12 1/2	20– 9	12 1/2	Digitek	+ 1/4	+ 2.00	—
AMSE	36 3/8	62– 30	35 7/8	Electronic Computer Prog. Inst.	+ 1 5/8	[illegible]	[illegible]
OTC	36	66– 30	62 1/2	Informatics	+ 1 1/2	+ 2.46	[illegible]
OTC	21	28– 14	14 1/2	Mobile Corp.	—	—	[illegible]
OTC	11 1/2	69– 2	[illegible]	National Computer Analysts	+ 7	+ 11.29	[illegible]
AMSE	31	45– 28	41	Planning Research	+ 2 3/8	[illegible]	+ 32.26
OTC	9	16– 8	10 1/4	Software Systems	– 3/4	– 6.82	+ 13.88
OTC	20 1/2	22– 12	13 3/4	TBS Computing Centers, Inc.	– 1	– 6.78	– 32.30
OTC	38	107– 57	100	University Computing	+ 13	[illegible]	[illegible]

EXCHANGE	BASE PRICE 3-1-68	1968 RANGE	CLOSING PRICE	LEASING COMPANIES	WEEK NET CHANGE	WEEK % CHANGE	% CHANGE FROM BASE
OTC	19	67– 18	**	Boothe Computer	**	**	**
OTC	19 1/4	28– 19	**	Chandler Leasing	**	**	**
OTC	4 1/4	20– 4	19	Computer Exchange	– 1	[illegible]	[illegible]
AMSE	26 1/8	38– 21	28 3/8	Computer Leasing	– 3/4	– 2.57	[illegible]
OTC	13 1/4	18– 11	18 1/4	Cyber-Tronics	—	—	—
AMSE	105 5/8	104– 26	30	Data Proc. Financial & General	– 1/2	[illegible]	– 13.72
OTC	12 1/2	17– 9	9	Datronic Rental	– 3/4	– 7.[illegible]	– 28.00
OTC	60	90– 19	40	Dearborn Computer	+ 2 1/2	[illegible]	[illegible]
OTC	12 1/4	19– 12	19 7/8	DPA, Inc.	– 3/8	[illegible]	[illegible]
AMSE	28 3/4	43– 27	29 3/4	Greyhound Computer	– 1/2	[illegible]	[illegible]
AMSE	28 1/4	28– 30	47	Granite Equipment Leasing	– 1 3/4	[illegible]	[illegible]
AMSE	40	90– 41	21 1/8	Leasco	+ 3	[illegible]	[illegible]
OTC	2	14– 3	19 1/4	[illegible] Computer Leasing	+ 1 3/4	[illegible]	[illegible]
AMSE	30 3/4	66– 27	51 7/8	Levin-Townsend Computer Corp.	+ 1 3/8	[illegible]	[illegible]
OTC	19 1/4	19– 7	19 1/4	LMC Data, Inc.	+ 1 3/8	[illegible]	[illegible]
OTC	10 7/8	16– 10	11 5/8	Management Assistance	+ 1 7/8	+ 10.23	[illegible]
AMSE	41 5/8	53– 28	34	National Equip. Rental	+ 5/8	+ 1.87	– 18.32
AMSE	38	64– 30	33 1/2	Randolph Computer Corp.	– 1 3/8	[illegible]	+ 14.47
OTC	10 1/2	42– 10	39	System Capital Corp.	+ 4	+ 11.43	+271.43
AMSE	10 7/8	21– 10	21 3/8	U.S. Leasing	+ 1 7/8	[illegible]	[illegible]

*Companies included in Computerworld's stock trading index for each sector.

Standard Memories Names Sales Agent

SHERMAN OAKS, Calif. – Standard Memories, Inc., a magnetic core memory systems manufacturer, has named Brogan Associates, Inc. as sales and service representatives for New England, New York, Maryland, the District of Columbia, and parts of Virginia.

Brogan will handle the complete Standard Memories line, including Micro-Stor, a magnetic integrated circuit random access core memory system, and the newly announced Economical Core Memory System, Standard Memories said.

Brogan has offices in Bethesda, Md.; Waltham, Mass.; Totowa, N.J.; and Rye, Syracuse, and Rochester, N.Y.

E.L.I. Industries Forms Time Sharing Company

EAST PATTERSON, N.J. – E.L.I. Computer Time Sharing, Inc. has been formed here as a new subsidiary of E.L.I. Industries, Inc.

Leonard Sandberg, president and chairman of the board of E.L.I. Industries, said that Leonard A. Kreuter is to head the new company and direct its movements into mathematical and commercial time sharing services for business, industry, and other fields.

E.L.I. Industries is a conglomerate company. In addition to E.L.I. Computer Time Sharing, the company's computer utility group includes E.L.I. Computer Systems, Inc. and Computer Innovations Systems, Inc., both headquartered in New York City.

U.S. Leasing Establishes Lease Analyzing Division

SAN FRANCISCO – United States Leasing International, Inc. has established a new division, U.S. Computer Consultants Corp., to assist users of IBM 360 computers on a fee basis, to obtain and analyze lease proposals from a large number of computer leasing companies.

Computer Consultants President Michael T. McCune said that the firm will try to save money for IBM users by identifying the best proposal for any given set of circumstances.

"Our service is entirely independent and unbiased," McCune said, adding that U.S. Leasing does not offer a cancellable computer rental contract and therefore does not compete with the computer leasing companies.

Computer Consultants' service is to be offered through U.S. Leasing's 39 offices in the United States and Canada, and through its affiliates in Great Britain, Japan, and West Germany.

Correction

In the Sept. 4 issue of *Computerworld*, all of the EDPeople photographs were over the wrong names. This occurred because the printer reversed the negative on the form. The photographs appear with the correct names below (we hope).

J.A. Cox

H.A. Wies

L.T. Sloner

R. Haag

S.D.B. Hunt

H.W. Richardson

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education

22 EDP School Franchises Granted in Only 9 Months

FORT LAUDERDALE, Fla. – The increasing demand for EDP training is underscored again by the success of one of the newer franchise computer school organizations, Computer Programming Centers, which granted its first franchise last December, already has 22 schools operating or scheduled to open in an area bounded by Miami, Houston, Chicago, and Boston.

The organization started in 1959 under the name Florida Electronics Data Schools. In 1966, it was expanded under the name Fort Lauderdale Technical College and offered 28 courses.

Like many franchise operations, Computer Programming Centers offers investors management training, site selection, complete furnishings and equipment, and continuing assistance from the home office. It also guarantees enrollment of the first 100 students.

The organization is 49% owned by Transcontinental Investing Corp. Franchise financing will be handled by North American Acceptance Corp., an Atlanta finance company and subsidiary of Transcontinental.

From Cafeteria to Computer Room

ESSEX, Conn. – If those new Tapemate scratch tape storage devices look familiar, it's probably because you first saw one in a cafeteria.

American Machine and Foundry Co., which makes the Tapemate dispenser, admits that the idea came from a device AMF originally designed for dishes and trays in cafeteria lines.

The tapes (dishes) ride on sprung platforms that keep the top tape (dish) within easy reach.

calendar

Sept. 23-27, Montreal, Canada – Fall Honeywell H400/1400 Users Conference. Contact: Jane Campbell, Bell Telephone of Canada, Montreal, Quebec.

Oct. 6-10, Montreal, Canada – 10th Annual EDP Conference and Retail Research Institute. Contact: Ethel Langtry, National Retail Merchants Assn., 100 W. 31st St., New York, N.Y. 10001.

Oct. 20-23, St. Louis, Mo. – 1968 International EDP Conference. Contact: SPA, 24587 Bagley Rd., Cleveland, Ohio 44138.

Oct. 21-23, Newport Beach, Calif. – Swap-Coop-Scope (CDC User Group) Joint Conference. Contact: James Hatch, Saginaw Steering Gear Div., G.M.C., 3900 Holland Rd., Saginaw, Mich. 48605.

Oct. 24-25, Detroit, Mich. – Adapso 24th Management Conference. Contact: Jerome L. Dreyer, Associates of Data Processing Service Organizations, 420 Lexington Ave., New York, N.Y. 10017.

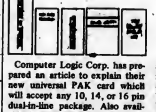
Oct. 28-Nov. 1, Chicago, Ill. – Bema 10th Annual Business Equipment Exposition, Management Conference and Management Cinema. Contact: Business Equipment Manufacturers Association, 235 E. 42nd St., New York, N.Y. 10017.

'Error: 36-26-36 Doesn't Compute!'

RIVERSIDE, Calif. – A computer will help students to choose more compatible roommates at the University of California at Riverside this fall.

"One of the major sources of unhappiness among students, particularly freshmen, is the problem of adjusting to a new roommate," said Dr. Norman Better, dean of students.

Students will fill out an eight page questionnaire on their likes and dislikes, and their general living habits. A computer then will match roommates with compatible life habits and attitudes.



Computer Logic Corp. has prepared an article to explain their new universal PAK card which will accept any 10, 14, or 16 pin dual-in-line package. Also available is a chart of all dual-in-line devices currently available. Computer Logic Corp., 1528 20th St., Santa Monica, Calif. 90404.

McGraw-Hill announced the publication of "Principles of Data Communications" by Dr. R.W. Lucky, Bell Telephone Laboratories, Inc.; Dr. J. Salz, University of Florida; and Dr. E.J. Weldon, Jr., University of Hawaii. The book is a reference for communications engineers. McGraw-Hill, 330 W. 42nd St., New York, N.Y. 10036. $14.50. Publication date: May 1968.

IBM Research Report Vol. 4, No. 1, 1968, is entitled "The Fastest Time of Addition and Multiplication." A mathematical analysis has established theoretical bounds for the speed of computer operations. Copy may be obtained from the Thomas J. Watson Research Center, P.O. Box 218, Yorktown Heights, N.Y. 10598.

Specifications of all current Ampex computer products, including core and tape memories, memory stacks and cores, are offered in a new brochure, "Ampex Computer Products Review, COM." Ampex Corp., 401 Broadway, Redwood City, Calif. 94063.

A new, four page bulletin, TB 402B on Micro Star, describes a new series of high speed, low cost core memory systems. The bulletin details complete specifications, input/output interface circuits, timing charts, and connector pin assignments. Standard Memories, Inc., 15130 Ventura Blvd., Sherman Oaks, Calif. 91403.

A feature article entitled "SDS in Critical Real Time Computing" appears in the latest issue of *Interface 15*, a 12 page magazine published quarterly by Scientific Data Systems, 1649 17th St., Santa Monica, Calif. 90404. Also available from SDS is a brochure describing their Sigma 5 and Sigma 7 time sharing software.

A new brochure describing the H632, first in Honeywell's Series 32 family of integrated circuit computer systems, is available from Honeywell Computer Control Division, Old Connecticut Path, Framingham, Mass. 01701.

A brochure which describes capabilities in real-time software for control of instruments and processes is available from Process Consulting, Inc., 1486 Second Ave., San Diego, Calif. 92101.

New Literature

Computer Sciences Interns Hired Under Federal Grant

COBLESKILL, N.Y. – Teaching internship programs in data processing have been established for the first time in a New York State two year college. An $18,500 program under the Federal Vocational Education Act has been approved for the State University Agricultural and Technical College at Cobleskill. The college will employ three interns, the maximum authorized during 1968-69.

The new program is designed to provide teaching and technical experience for candidates completing a bachelor's or master's degree in business, mathematics, or a related field, according to President Walton A. Brown. The intern is paid from federal funds by the college during the semester or academic year.

Learning via Teaching

Over the course of the training session, the intern gains teaching experience in a subject area compatible with his background, and advances his own proficiency in computer languages by observing and assisting with data processing courses in the associate degree program.

In addition, the teaching intern experiences an orientation to junior college education, observes students as they examine placement opportunities in business, education, industry, and government and visits firms employing recent graduates of the college to determine strengths and weaknesses in present instruction.

For the period of the appointment each intern will work with an experienced instructor in data processing under the supervision of William B. Brophy, chairman of the Business Division. Upon completion of the program, the intern is free to accept employment of his choice.

The program in data science at Cobleskill will accommodate 135 of the college's 570 associate degree candidates in business this fall. The total college fall time enrollment will reach 1500.

No Longer Is a Slide Rule The Mark of an Engineer

POTSDAM, N.Y. – There was a time when you could identify an engineering student by the slide rule or "T" square he carried about with his books. But no longer. Today's engineering major is more likely to sport a set of punch cards in his handkerchief pocket.

There won't be many slide rules in evidence at Clarkson College of Technology here when the fall term begins this month. Nearly all of the 2300 students and faculty at the college will be using the school's new computer in their work or studies.

About 85% of Clarkson's 700 freshmen will be writing their own programs for the school's IBM 360/44, because they will be enrolling in an introductory course familiarizing students with computer essentials.

School officials believe this puts Clarkson in the front ranks of those colleges and universities that are making data processing an integral part of higher education.

"Just as every engineer had to know how to use a slide rule," says Dr. Hermann L. Shulman, executive vice president of the college, "so he should now know how to use a computer."

This term, Clarkson's 1800 undergraduates will learn computer concepts while nearly all graduate students will use the computer on a variety of problems ranging from studies in light deflection to analyses of accounting procedures.

Security Dictated Choice of Terminals

(Continued from Page 1)

the check. The vocal response comes back that the check is not "good." The teller then taps a final two digit code indicating why the check is being cashed, to which the reply is that the amount of the check has been posted against the account balance.

Among other capabilities, the system also can give account balances. All information is available only within the bank, so the general public has no contact with the audio response unit, Van Buskirk said.

The system is set up to be used by ordinary push-button telephones. But Fort Wayne has not yet converted to push buttons, so the bank is using General Telephone data retrieval telephones equipped with a dial and a push-button pad. Those telephones can also be used for ordinary calls and regular telephone lines are used to reach the computer. General Telephone also supplies the interface between the computer and telephone system. Fort Wayne is not a Bell Telephone area and is served by a General Telephone company.

One thousand checking and savings account inquiries are handled each day. From start to finish, the average transaction takes 32 seconds, half the time previously required. The main bank and five branches have 55 data retrieval telephones. The audio response unit can conduct 10 simultaneous conversations.

Competitive Advantage

Lincoln has had its audio response unit in operation for two months. "At present we are not justifying the cost of this audio system," explained Van Buskirk, stressing that its immediate importance was the competitive advantage it gives the bank. "We are very cutthroat here in Fort Wayne," he explained.

But Lincoln does expect the system to pay for itself eventually. The next step will be to add installment loan inquiries to the system. This will require doubling the vocabulary to 64 words and numbers, he said.

All of the programming for the system was done by Lincoln, with aid from IBM. Lincoln plans to put their audio system up for sale. But Van Buskirk noted that it was an "easy" programming job, so that "anyone who has an average programmer would be foolish to buy the program."

Lincoln's 360/30 handles all checking, savings, and club accounts, as well as the audio system. Through multiprogramming, the computer can do 90% of its other work while the audio system is in operation. This small loss of capacity is no problem, since most of their computer work is done at night, while the audio system is only used during the day, he said.

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Computer Stock Report . . . financial and business news about companies whose fortunes are affected by the computer field. A stock table gives closing prices for computer firms whose securities are traded on the NYSE, ASE, and over-the-counter. There are also weekly stock charts, and listings of firms making stock offerings.

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